

IN THE SPECIFICATION

[0008] Figs. 3A-C and 4A-D illustrate typical equipment foundation requirements.

[0022] Referring now to the drawings in detail, wherein like numerals indicate the same elements throughout the views, Fig. 1 is a ~~is-a~~ perspective, partially cut-away view of a heavy duty inground lift 2 including two modules 4 and 6, each having its own respective power unit (seen only in module 4 as power unit 8). The depicted embodiment has a capacity of 30,000 lbs ~~per jack~~. Lift 2 includes control panel 10, located in any desired location.

[0024] Carriage 20 is moved by chains 32 which are ultimately driven by ~~driven by~~ the hydraulic motor and gear reducer assembly 34 located as appropriate, in the depicted embodiment at one end of housing 16. Moving shingles 36 travel with carriage 20, covering the top of housing 16 regardless of the location of jack 12. The horizontal position of jack 12 is monitored by any appropriate device, such as string potentiometer, diagrammatically illustrated as 38, secured at one end to a fixed location.

[0025] In the present invention, all the support for the load carried by jacks 12 and 14 is provided by the lift bay floor 40, rather than the sidewalls 16a and the bottom of the trench. The present invention includes structure which ~~interact~~ interacts in conjunction with the lift bay floor 40 to transfer substantially all of the load to the lift bay floor 40. In the depicted embodiment, floor 40 is constructed to have the necessary structural capacity with the necessary underlying supporting layer providing the foundational support.

[0031] Referring to Figs. 2-4 2-4D, as mentioned above, lift 2 includes structure which interact in conjunction with the lift bay floor 40 to transfer substantially all of the load to the lift bay floor 40. In the depicted embodiment, floor 40 is constructed to have the necessary structural capacity with the necessary underlying supporting layer providing the foundational support. In the depicted embodiment, housings 16 and 18 include members 46, including

reinforcing bars (also known as rebar), extending from the upper portion of the housings.

[0032] The physical characteristics of such members, such as location, size, quantity and orientation, are determined so as to provide the necessary interaction between them and the surrounding lift bay floor 40 to provide the load transfer required. As seen in Figs. 3A-C and 4A-D, rebar is arranged in a pattern sufficient to provide the necessary structural strength and integrity for lift bay floor 40 to support lift 2 with jacks 12 and 14. Figs. 3A-C and 4A-D illustrate the typical equipment foundation requirements, including the placement of gravel and other typical material. FIGS. 3A-C are an end view, a top view and a side view, respectively, of module 4 installed in trench 122. Bottom of housing 16b is disposed within trench 122 on top of a substrate of pea gravel 124. Pea gravel 126 is disposed adjacent the lower portion of sidewalls 16a. Upper surface 128 is surface compacted after module 4 and the pea gravel is in place in the trench 122. Rigid material 130 is disposed overlaying the pea gravel. The installation is the same for module 6. FIGS. 4A, C and D are an end view, a top view and a side view, respectively, of module 6 installed in trench 132. Bottom of housing 18b is disposed within trench 132 on top of a substrate of pea gravel 134. Pea gravel 136 is disposed adjacent the lower portion of sidewalls 18a. Upper surface 138 is surface compacted after module 6 and the pea gravel is in place in the trench 132. Rigid material 140 is disposed overlaying the pea gravel as seen in FIGS. 4C & D. FIG. 4B is an enlarged, fragmentary illustration of members 46, some 46a of which installed at the time of manufacture of module 6, others 46b of which are installed at the time of installation. Ends of some members 46c are disposed (and preferably epoxied) in holes drilled into the edges of a previously poured floor section 142 adjacent the trench into which the lift bay floor will be poured, or extend into the slab reinforcement for the adjacent area of floor to be poured. Although rigid insulation is illustrated adjacent the housings 16 and 18, such is not necessarily placed there. The thickness of the surrounding lift bay floor 40 slopes from its nominal thickness to an increased thickness proximal the housings 16 and 18. Although Fig. 3 illustrates Figs. 3A-c and 4A, C & D

illustrate pea gravel disposed well beyond the sides of the ~~housing 16~~ housings 16 & 18, extending beyond the top of the trench in which ~~housing 16 is~~ housings 16 and 18 are disposed, such is not necessarily placed there.

[0036] The fluid pressurizes cavities 54, 54a and 54b, which are in communication with each other. Synchronous motion results from fluid located in cavity 48d being forced into internal cavity 56, which is not in fluid communication with cavities 54, 54a and 54b, through passageways 56a. This fluid forces section 48c to extend the same amount in order to maintain internal cavity 56 at a constant volume. Since the annular area of cavity 48d is equal to the annular area of the difference between the ~~inner~~ outer diameter of section ~~48b~~ 48c and the inner diameter of section 48c, the linear displacement of sections 48b and 48c are equal. Spring loaded valve 58 includes stem 58a which contacts wall 60 when the sections 48a, 48b and 48c are collapsed within each other, thereby equalizing the pressure between cavities 54, 54a and 54b, and cavity 56.

[0040] Telescoping locking leg 50 is carried by flange 82 extending from the outside of cylinder 48, and includes upper leg 76 which is telescopingly disposed relative to and, in the depicted embodiment, within lower leg 78. Lower locking mechanism 80 is carried by flange 82, and guides lower leg 78 as it moves through the opening (not numbered) as lift 12 is raised and lowered. Lower locking mechanism 80 includes pivoting latch 84 which is normally biased into engagement with a series of vertically aligned windows and steps 86, resembling a ladder, by spring 88. ~~Latch 84 is~~ Engagement of latch 84 with any of the steps 86 prevents lift 12 from lowering beyond that step, thereby providing a positive mechanical lock, preventing downward movement of the lift. In order to lower the lift intentionally, latch 84 is held in its disengaged position by actuation of air cylinder 90.

[0042] As lift 12 is raised, upper leg 76 will be the first leg to move, traveling upwardly by virtue of being connected to saddle 52. Stops 92 are spaced about 24 inches down from the top of upper leg 76 and the safety stops are not

needed before upper leg 76 has extended that far. Once the extension of upper leg 76 has caused latches 100 and 102 to reach the last set of blocks 92, with latches 100 and 102 in the engaged position, upper leg 76 will stop telescoping from lower leg 78 and lower leg 78 will begin extending from lower locking mechanism 80. Upper leg 76 is interconnected to lower leg 78 by rod 108 which allows movement therebetween until upper leg 76 has extended the desired/designed amount. At that point, rod 108 will pull lower leg 78 upward as saddle 52 pulls upper leg 76 upward with it.